

What Is Claimed Is:

1. A solid-state image pickup device, comprising:
a plurality of photoelectric conversion sections
provided in a semiconductor layer;

a transfer switch provided adjacent said
photoelectric conversion sections in said semiconductor
layer for transferring charge from said photoelectric
conversion sections; and

means for applying a predetermined voltage to said
semiconductor layer within a period which includes at
least part of a transfer period of said transfer switch.

2. The solid-state image pickup device according
to claim 1, wherein the predetermined voltage shallows
the potential in charge storage regions of said
photoelectric conversion sections.

3. A solid-state image pickup device, comprising:
a plurality of photoelectric conversion sections
provided in a semiconductor layer; and

means for applying a first voltage and a second
voltage different from the first voltage to said
semiconductor layer within a period including at least
part of a charge storage period of said photoelectric
conversion section.

4. The solid-state image pickup device according

to claim 3, wherein the first voltage shallows the potential in charge storage regions of said photoelectric conversion sections more than the second voltage.

5. The solid-state image pickup device according to claim 3, wherein the second voltage is 0 volt.

6. A solid-state image pickup device, comprising:
a semiconductor substrate having a well region formed thereon;

a photoelectric conversion element formed in said well region for receiving light and producing signal charge in accordance with an amount of the received light;

a readout section formed in said well region for reading out the signal charge produced by said photoelectric conversion element at a predetermined readout timing; and

voltage control means for applying a predetermined substrate bias voltage to said well region upon reading out of the signal charge by said readout section.

7. The solid-state image pickup device according to claim 6, wherein said photoelectric conversion element is provided for each of a plurality of pixels formed in a two-dimensional array on said semiconductor substrate.

8. The solid-state image pickup device according

to claim 7, wherein said well region is formed electrically integrally in a region of said semiconductor substrate which includes all of said pixels arranged in the two-dimensional array, and a common substrate bias voltage to all of said pixels is applied to the well regions.

9. The solid-state image pickup device according to claim 7, wherein said well region is formed in an electrically isolated relationship for each row of said pixels arranged in the two-dimensional array, and an independent substrate bias voltage is applied to the cell regions for each row.

10. The solid-state image pickup device according to claim 6, wherein said well region is a p-type well region and the substrate bias voltage is a negative voltage.

11. The solid-state image pickup device according to claim 6, wherein said solid-state image pickup device is a complementary metal-oxide semiconductor type solid-state image pickup device which includes a plurality of pixels each of which includes said photoelectric conversion element and a pixel transistor for converting the signal charge read out from said photoelectric conversion element into an electric signal and outputting

the electric signal to a signal line.

12. The solid-state image pickup device according to claim 6, wherein said solid-state image pickup device is a charge-coupled devices type solid-state image pickup device which includes a plurality of pixels each of which includes said photoelectric conversion element, a charge transfer section for fetching and successively transferring the signal charge produced by the photoelectric conversion elements of said pixels, and a common conversion section for successively converting the signal charge successively transferred by said charge transfer section into an electric signal.

13. A solid-state image pickup device, comprising:
a semiconductor substrate having a well region formed thereon;

a photoelectric conversion element formed in said well region for receiving light and producing signal charge in accordance with an amount of the received light;

a readout section formed in said well region for reading out the signal charge produced by said photoelectric conversion element at a predetermined readout timing; and

voltage control means for applying a substrate bias

voltage to said well region and changing the substrate bias voltage during a storage period of the signal charge by said photoelectric conversion element.

14. The solid-state image pickup device according to claim 13, wherein said photoelectric conversion element is provided for each of a plurality of pixels formed in a two-dimensional array on said semiconductor substrate.

15. The solid-state image pickup device according to claim 14, wherein said well region is formed electrically integrally in a region of said semiconductor substrate which includes all of said pixels arranged in the two-dimensional array, and a common substrate bias voltage to all of said pixels is applied to the well regions.

16. The solid-state image pickup device according to claim 14, wherein said well region is formed in an electrically isolated relationship for each row of said pixels arranged in the two-dimensional array, and an independent substrate bias voltage is applied to the cell regions for each row.

17. The solid-state image pickup device according to claim 13, wherein said well region is a p-type well region and the substrate bias voltage is a negative

voltage.

18. The solid-state image pickup device according to claim 13, wherein said solid-state image pickup device is a complementary metal-oxide semiconductor type solid-state image pickup device which includes a plurality of pixels each of which includes said photoelectric conversion element and a pixel transistor for converting the signal charge read out from said photoelectric conversion element into an electric signal and outputting the electric signal to a signal line.

19. The solid-state image pickup device according to claim 13, wherein said solid-state image pickup device is a charge-coupled devices type solid-state image pickup device which includes a plurality of pixels each of which includes said photoelectric conversion element, a charge transfer section for fetching and successively transferring the signal charge produced by the photoelectric conversion elements of said pixels, and a common conversion section for successively converting the signal charge successively transferred by said charge transfer section into an electric signal.

20. A driving method for a solid-state image pickup device wherein a photoelectric conversion element for receiving light and producing signal charge in

accordance with an amount of the received light and a readout section for reading out the signal charge produced by said photoelectric conversion element at a predetermined readout timing are provided in a well region formed on a semiconductor substrate, comprising a step of applying a predetermined substrate bias voltage to said well region upon reading out of the signal charge by said readout section.

21. The driving method for a solid-state image pickup device according to claim 20, wherein said photoelectric conversion element is provided for each of a plurality of pixels formed in a two-dimensional array on said semiconductor substrate.

22. The driving method for a solid-state image pickup device according to claim 21, wherein said well region is formed electrically integrally in a region of said semiconductor substrate which includes all of said pixels arranged in the two-dimensional array, and a common substrate bias voltage to all of said pixels is applied to the well regions.

23. The driving method for a solid-state image pickup device according to claim 21, wherein said well region is formed in an electrically isolated relationship for each row of said pixels arranged in the two-

dimensional array, and an independent substrate bias voltage is applied to the cell regions for each row.

24. The driving method for a solid-state image pickup device according to claim 20, wherein said well region is a p-type well region and the substrate bias voltage is a negative voltage.

25. A driving method for a solid-state image pickup device wherein a photoelectric conversion element for receiving light and producing signal charge in accordance with an amount of the received light and a readout section for reading out the signal charge produced by said photoelectric conversion element at a predetermined readout timing are provided in a well region formed on a semiconductor substrate, comprising

a step of applying a substrate bias voltage to said well region and changing the substrate bias voltage during a storage period of the signal charge by said photoelectric conversion element.

26. The driving method for a solid-state image pickup device according to claim 25, wherein said photoelectric conversion element is provided for each of a plurality of pixels formed in a two-dimensional array on said semiconductor substrate.